

Serial No.: 09/458,533
Filed: December 9, 1999

Please enter the amendments below and consider the following remarks.

In the claims:

Please cancel Claim 2 without prejudice or disclaimer to Applicants' right to pursue the subject matter of this claim in one or more continuation, continuation-in-part, or divisional applications.

Please add the following claims:

Rule 126
36 28. An apparatus for electrical detection of molecular interactions between an immobilized oligonucleotide probe and a target nucleic acid molecule, said apparatus comprising a supporting substrate comprising:

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- a) a plurality of microelectrodes each comprising a conjugated polymer film and a different immobilized oligonucleotide probe;
 - b) a voltage source connected to said microelectrodes;
 - c) an electrolyte solution comprising a solution of Li⁺ ions; and
 - d) a detector connected to said microelectrodes.

37
29. An apparatus for electrical detection of molecular interactions between an immobilized oligonucleotide probe and a target nucleic acid molecule, said apparatus comprising a supporting substrate comprising:

- a) a plurality of microelectrodes each comprising a polymer gel pad and a different immobilized oligonucleotide probe;

Serial No.: 09/458,533
Filed: December 9, 1999

- b) a voltage source connected to said microelectrodes;
- c) an electrolyte solution comprising a solution of Li⁺ ions; and
- d) a detector connected to said microelectrodes.

38

30. An apparatus according to claim 28 or 29 wherein said apparatus further comprises a counter-electrode.

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31. An apparatus according to claim 28 or 29 wherein said apparatus further comprises a reference electrode.

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32. An apparatus according to claim 28 or 29 wherein said detector will detect changes in impedance at each microelectrode.

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33. An apparatus according to claim 28 or 29 wherein said solution of Li⁺ ions comprises a solution of LiClO₄.

42

34. An apparatus according to claim 33 wherein said solution of LiClO₄ is about 0.1 M.

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35. An apparatus according to Claims 28 and 29 wherein the microelectrodes comprise a conductive material and an insulating material.

Serial No.: 09/458,533
Filed: December 9, 1999

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~~36.~~ An apparatus according to Claim 35 wherein the conductive material is solid or porous gold, silver, platinum, titanium, copper, metal oxide, metal nitride, metal carbide, or graphite carbon.

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~~37.~~ An apparatus according to Claim 36 wherein the conductive material is platinum.

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~~38.~~ An apparatus according to Claim 36 wherein the conductive material is gold.

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~~39.~~ An apparatus according to Claim 35 wherein the insulating material is glass, silicon, plastic, rubber, fabric, ceramic or a combination thereof.

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~~40.~~ An apparatus according to Claim 39 wherein the insulating material is silicon.

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~~41.~~ An apparatus according to Claim 39 wherein the insulating material is glass.

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~~42.~~ An apparatus according to Claim 35 wherein the conductive material is embedded in the substrate and the substrate comprises the insulating material.

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~~43.~~ An apparatus according to Claim 35 wherein the conductive material is silver/silver chloride.

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~~44.~~ An apparatus of Claims 28 and 29 wherein the supporting substrate comprises ceramic, glass,

Serial No.: 09/458,533
Filed: December 9, 1999

silicon, fabric or plastic.

53

45. An apparatus of Claim 28 wherein the conjugated polymer or copolymer used for probe attachment includes, but is not limited to, polypyrrole, polythiophene, polyaniline, polyfuran, polypyridine, polycarbazole, polyphenylene, poly(phenylenvinylene), polyfluorene, polyindole, their derivatives, their copolymers and their combinations thereof.

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46. An apparatus of Claims 28 and 29 wherein probes are attached to microelectrodes using a neutral pyrrole matrix.

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47. An apparatus of Claim 29 wherein the gel polymer pads are polyacrylamide.

REMARKS

Claim 2 has been canceled. Claims 28- 47 have been added.

Claim 28 contains similar subject matter to original Claim 2 that was previously allowed. This claim has been rewritten for clarity. Claims 30-46 are dependent claims thereof.

Claim 29 contains similar subject matter to original Claim 3, that was previously allowed. This claim has been rewritten for clarity. Claims 30-44, 46 and 47 are dependent claims thereof.

These amendments raise no new issues and the Applicants respectfully request that they be entered. On the basis of the amendments and remarks presented herein, Applicants believe

Serial No.: 09/458,533
Filed: December 9, 1999

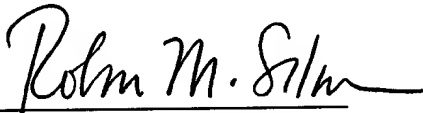
that this application is now in condition for immediate allowance. Applicants respectfully request that the Examiner pass this application to issue and an early notice of such is requested.

Please direct any calls in connection with this application to the undersigned at (415) 781-1989.

Respectfully submitted,

FLEHR, HOHBACH, TEST,
ALBRITTON & HERBERT

Dated: 21 March, 2001


Robin M. Silva (38,304)

Four Embarcadero Center, Suite 3400
San Francisco, CA 94111-4187
Telephone: (415) 781-1989
1041793